REMARKS

Prior to entry of this amendment, claims 1-13 and 18-20 are currently pending in the subject application. Claims 1, 8, 9, and 13 are independent. In this amendment, claims 1, 8, 9, and 13 have been amended. No new matter is added by the amendments to claims 1, 8, 9, and 13. For example, support for the amendments to claims 1, 8, 9, and 13 may be found at least in paragraphs [0036] – [0037], [0042] and [0045] – [0046] and FIGS. 1, 2 and 4 of the application as originally filed. Entry of the foregoing amendments and reconsideration in light of the following remarks is respectfully requested.

A. Introduction

In the outstanding Office action:

1) claims 1-7, 9-12 and 18 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,731,824 to Russell ("the Russell reference"); and

2) claims 8, 13, 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Russell reference in view of U.S. Patent No. 6,326,618 to Kane et al. ("the Kane et al. reference").

B. Asserted Anticipation Rejections of Claims 1-7, 9-12 and 18

In the Office action, the Examiner rejected claims 1-7, 9-12 and 18 under 35 U.S.C. § 102(e) as being anticipated by the Russell reference. The rejection of claims 15-16 and 18 is respectfully traversed for at least the reasons set forth below.

It is respectfully submitted that the Russell reference does not teach or suggest each and every element of claims 1-7, 9-12 and 18, and therefore, a *prima facie* case of anticipation has not been established. For example, beginning with claim 1, as amended, which recites, *inter alia:*

> generating an image of a region of the sample to be analyzed;

> generating data having a frequency from a plurality of portions of the image by the Fast Fourier Transformation method; and
>
> determining whether the region is normal or abnormal based on a comparison of portions of the data generated by the Fast Fourier Transformation method without using a separate reference sample.

It is respectfully submitted that the Russell reference does not teach or suggest at least "determining whether the region is normal or abnormal based on a comparison of portions of the data generated by the Fast Fourier Transformation method without using a separate reference sample", as recited in claim 1. Independent apparatus claim 9 has been similarly amended.

Although the Russell reference discloses a spatial filtering method, the Russell reference does not teach or suggest the claim limitations noted above. Rather, the Russell reference discloses a computationally complex spatial filtering method wherein a digital image sample is obtained, a data array is generated by a first Fourier Transform, a power spectrum of the data array is calculated, a mask is generated based on the obtained image, the mask is dilated, the dilated mask is applied to the data array, an inverse Fourier transform is calculated to obtain a spatially filtered image, and the resulting image is converted into a grayscale image. The resulting grayscale image is then displayed and defects are either identified from the resulting grayscale image, or the resulting grayscale image is compared to the original image in order to make defects visually identifiable. For example, quoting from col. 5, line 54 to col. 5, line 60 of the Russell reference,

> Although the resulting visualized image shown in FIG. 6 makes small irregularities more visible, the original image may be referred to by one of several techniques, such as switching between a display of the original image and a display of the resulting visualized image in-place and on demand, and/or by the use of automatic switching controlled by a timer.

As clearly shown by the above excerpt from the Russell reference, the Russell reference does not teach or suggest at least determining "whether the region is normal or abnormal based on a comparison of portions of the data generated by the Fast Fourier Transformation method without using a separate reference sample", as recited in claims 1 and 9. In contrast, as noted

above, the Russell reference describes a computationally complex process of forming an image that must then be **visually** analyzed in order to identify defects.

As now more clearly recited in the independent claims 1 and 9, a method and apparatus may be employed to accurately and efficiently identify defects in a semiconductor device. This is not a mere design choice, but may allow for an increase in manufacturing efficiency, for example. Thus, not only does the Russell reference fail to teach or suggest all of the claim elements recited in claims 1 and 9, the device taught by the Russell reference fails to provide the advantages afforded by the claim elements recited in claims 1 and 9.

In view of the above, applicants respectfully submit that the Russell reference fails to teach or suggest each and every element of claims 1 and 9. Therefore, it is submitted that claims 1 and 9 are not anticipated by the Russell reference. Rejected claims 2-7, 9-12 and 18 depend, either directly or indirectly, from respective ones of claims 1 and 9, and, therefore, are not anticipated by the Russell reference for at least the same reasons. Accordingly, applicants respectfully request that the rejection of claims 1-7, 9-12 and 18 under 35 U.S.C. § 102(b) be favorably reconsidered and withdrawn.

C. Asserted Obviousness Rejection of Claims 8, 13, 19 and 20

In the Office action, claims 8, 13, 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Russell reference in view of the Kane et al. reference. This rejection of pending claims 8, 13, 19 and 20 is respectfully traversed for at least the reasons set forth below.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), all the claim limitations of the rejected claims must be described or suggested by the cited document(s).[1] In addition, the rejection must establish that it would have been obvious for one of ordinary skill in the art to have modified or combined the teachings of the cited

[1] See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See also MPEP § 2143.03.

document(s) in the manner applied to reject the claims.[2] One way to establish this would be to show that there is some suggestion or motivation, either in the cited document(s) themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the cited document(s) or to combine the teachings from those document(s).

It is respectfully submitted that the cited documents do not meet these criteria, because no combination of the Russell reference with the Kane et al. reference would describe or suggest all of the claim limitations of rejected claims 8, 13, 19 and 20. Therefore, a *prima facie* case of obviousness has not been established.[3]

For example, referring to claims 8 and 19, it is respectfully submitted that no combination of the Russell reference with the Kane et al. reference would describe or suggest all of the claim limitations of claims 8 and 19. Claim 8, as amended, recites:

> generating a magnified image of a minute pattern formed in a cell region of a semiconductor substrate;
> measuring a line width of the minute pattern using the magnified image;
> generating data having a frequency from a plurality of portions of the image by the Fast Fourier Transformation method; and
> determining whether the region is normal or abnormal based on a comparison of portions of the data generated by the Fast Fourier Transformation method without using a separate reference sample.

It is respectfully submitted that no combination of the Russell reference with the Kane et al. reference describes or suggests at least "determining whether the region is normal or abnormal based on a comparison of portions of the data generated by the Fast Fourier Transformation method without using a separate reference sample", as recited in claim 8, from which claim 19 depends. Independent apparatus claim 13, from which claim 20 depends, has been similarly amended.

As noted above with reference to the 35 U.S.C. § 102(e) rejection, section B, the Russell reference fails to describe or suggest each and every element of claim 1. Claim 8 has

[2] See *KSR International, Co. v. Teleflex, Inc.* No. 04-1350 (U.S. Apr. 30, 2007).

[3] The applicants do not concede that a successful combination could be made, or that the rejection demonstrates some suggestion or motivation either in the cited documents themselves or in the knowledge generally available to one of ordinary skill in the art to combine the cited documents.

been amended to include limitations similar to those in claim 1. Furthermore, it is respectfully submitted that the Kane et al. reference fails to cure the noted deficiencies of the Russell reference. In fact, the Kane et al. reference refers to data analysis requiring a comparison between the analyzed sample to a known reference sample. See, for example, col. 5, lines 23-40 and col. 8, lines 1-5 of the Kane et al. reference.

For at least the reasons set forth above, it is submitted that neither the Russell reference nor the Kane et al. reference, either alone or in combination, suggest, much less disclose, claims 8, 13, 19, and 20. Accordingly, it is respectfully submitted that the rejection fails to establish a *prima facie* case of obviousness, and claims 8, 13, 19 and 20 are in condition for allowance. Therefore, applicants respectfully request that the rejection of claims 8, 13, 19 and 20 under 35 U.S.C. § 103(a) be favorably reconsidered and withdrawn.

D. Conclusion

The above remarks point out the fatal deficiencies of the outstanding rejections, and are sufficient to overcome them. However, while these remarks may refer to particular claim elements, they are not intended to, nor need they comprehensively address each and every reason for the patentability of the claimed subject matter over the cited document(s). Accordingly, applicants respectfully submit that the claims are allowable for reasons including, but not limited to, those set forth above, and that the patentability of the claims does not depend solely on the particular claim elements discussed above.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

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PETITION and
DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.